Release notes for ENDF/B Development n-040_Zr_094 evaluation

April 26, 2017

- `psyche` Warnings:

1. Gamma width not in agreement with PSYCHE's expectations
   FILE 2 / SECTION 151 / ISOTOPE MASS = 94. L = 1 / AT RESONANCE ENERGY 1.05620E+04 EV. THE GAMMA WIDTH 5.00000E-02 DEVIATES TOO MUCH FROM THE AVERAGE 1.70679E-01 (0): Gamma width

```
FILE  2
   SECTION 151
        ISOTOPE MASS =  94. L =  1
                AT RESONANCE ENERGY  1.05620E+04 EV. THE GAMMA WIDTH  5.00000E-02 DEVIATES TOO MUCH FROM THE AV
```

2. Strength function in URR not in agreement with PSYCHE's expectations
   FILE 2 / SECTION 151 / ISOTOPE MASS = 94. L = 1 / STRENGTH FUNCTION IS 9.58015E-04 / STRENGTH FUNCTION 9.58015E-04 / LIES OUTSIDE LIMITS 1.00000E-04 TO 8.00000E-04 (0): URR str. ftn.

```
FILE  2
   SECTION 151
        ISOTOPE MASS =  94. L =  1
                STRENGTH FUNCTION IS  9.58015E-04
                              STRENGTH FUNCTION 9.58015E-04
... [1 more lines]
```

3. Level density in URR not in agreement with PSYCHE's expectations
   FILE 2 / SECTION 151 / ENERGY = 8.94000E+04. STRENGTH FUNCTION IS 5.62000E-04 / ENERGY = 8.94000E+04. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 2.11442E+03 SHOULD BE 1.89272E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
         ENERGY =  8.94000E+04. STRENGTH FUNCTION IS  5.62000E-04
                   ENERGY =  8.94000E+04. STRENGTH FUNCTION IS  5.62000E-04
                                 DENSITY  2.11442E+03 SHOULD BE  1.89272E+03
```

4. Level density in URR not in agreement with PSYCHE's expectations
   FILE 2 / SECTION 151 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 2.08652E+03 SHOULD BE 1.86775E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.00000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  2.08652E+03 SHOULD BE  1.86775E+03
```

5. Level density in URR not in agreement with PSYCHE's expectations
   FILE 2 / SECTION 151 / ENERGY = 1.10000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 2.06056E+03 SHOULD BE 1.84451E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.10000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  2.06056E+03 SHOULD BE  1.84451E+03
```

6. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.20000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 2.03494E+03 SHOULD BE 1.82158E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.20000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  2.03494E+03 SHOULD BE  1.82158E+03
```

7. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.30000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 2.00966E+03 SHOULD BE 1.79894E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.30000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  2.00966E+03 SHOULD BE  1.79894E+03
```

8. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.40000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.98471E+03 SHOULD BE 1.77661E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.40000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.98471E+03 SHOULD BE  1.77661E+03
```

9. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.50000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.96009E+03 SHOULD BE 1.75457E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.50000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.96009E+03 SHOULD BE  1.75457E+03
```

10. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.60000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.93579E+03 SHOULD BE 1.73282E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.60000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.93579E+03 SHOULD BE  1.73282E+03
```

11. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.70000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.91181E+03 SHOULD BE 1.71136E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.70000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.91181E+03 SHOULD BE  1.71136E+03
```

12. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.80000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.88815E+03 SHOULD BE 1.69018E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.80000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.88815E+03 SHOULD BE  1.69018E+03
```

13. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.90000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.86479E+03 SHOULD BE 1.66927E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.90000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.86479E+03 SHOULD BE  1.66927E+03
```

14. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 2.90000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.64741E+03 SHOULD BE 1.47468E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  2.90000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.64741E+03 SHOULD BE  1.47468E+03
```

15. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 3.90000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.45670E+03 SHOULD BE 1.30397E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  3.90000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.45670E+03 SHOULD BE  1.30397E+03
```

16. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 4.90000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.28922E+03 SHOULD BE 1.15405E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  4.90000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.28922E+03 SHOULD BE  1.15405E+03
```

17. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 5.90000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.14199E+03 SHOULD BE 1.02226E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  5.90000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.14199E+03 SHOULD BE  1.02226E+03
```

18. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 6.90000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 1.01244E+03 SHOULD BE 9.06287E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  6.90000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  1.01244E+03 SHOULD BE  9.06287E+02
```

19. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 7.90000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 8.98334E+02 SHOULD BE 8.04144E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  7.90000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  8.98334E+02 SHOULD BE  8.04144E+02
```

20. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 8.90000E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 7.97741E+02 SHOULD BE 7.14099E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  8.90000E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  7.97741E+02 SHOULD BE  7.14099E+02
```

21. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 9.18750E+05. STRENGTH FUNCTION IS 5.62000E-04 / DENSITY 7.71078E+02 SHOULD BE 6.90232E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  9.18750E+05. STRENGTH FUNCTION IS  5.62000E-04
                          DENSITY  7.71078E+02 SHOULD BE  6.90232E+02
```

22. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 8.94000E+04. STRENGTH FUNCTION IS 1.20000E-04 / ENERGY = 8.94000E+04. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.69540E+03 SHOULD BE 1.40961E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
         ENERGY =  8.94000E+04. STRENGTH FUNCTION IS  1.20000E-04
                  ENERGY =  8.94000E+04. STRENGTH FUNCTION IS  1.20000E-04
                                DENSITY  1.69540E+03 SHOULD BE  1.40961E+03
```

23. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.67303E+03 SHOULD BE 1.39101E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.00000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.67303E+03 SHOULD BE  1.39101E+03
```

24. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.10000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.65221E+03 SHOULD BE 1.37370E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.10000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.65221E+03 SHOULD BE  1.37370E+03
```

25. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.20000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.63167E+03 SHOULD BE 1.35663E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.20000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.63167E+03 SHOULD BE  1.35663E+03
```

26. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.30000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.61140E+03 SHOULD BE 1.33977E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.30000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.61140E+03 SHOULD BE  1.33977E+03
```

27. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.40000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.59140E+03 SHOULD BE 1.32314E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.40000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.59140E+03 SHOULD BE  1.32314E+03
```

28. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.50000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.57165E+03 SHOULD BE 1.30672E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.50000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.57165E+03 SHOULD BE  1.30672E+03
```

29. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.60000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.55217E+03 SHOULD BE 1.29053E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.60000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.55217E+03 SHOULD BE  1.29053E+03
```

30. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.70000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.53294E+03 SHOULD BE 1.27454E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.70000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.53294E+03 SHOULD BE  1.27454E+03
```

31. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.80000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.51397E+03 SHOULD BE 1.25876E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.80000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.51397E+03 SHOULD BE  1.25876E+03
```

32. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 1.90000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.49525E+03 SHOULD BE 1.24320E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  1.90000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.49525E+03 SHOULD BE  1.24320E+03
```

33. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 2.90000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.32094E+03 SHOULD BE 1.09828E+03 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  2.90000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.32094E+03 SHOULD BE  1.09828E+03
```

34. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 3.90000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.16803E+03 SHOULD BE 9.71137E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  3.90000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.16803E+03 SHOULD BE  9.71137E+02
```

35. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 4.90000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 1.03374E+03 SHOULD BE 8.59482E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  4.90000E+05. STRENGTH FUNCTION IS  1.20000E-04
                          DENSITY  1.03374E+03 SHOULD BE  8.59482E+02
```

36. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 5.90000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 9.15683E+02 SHOULD BE 7.61329E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  5.90000E+05. STRENGTH FUNCTION IS  1.20000E-04
                         DENSITY  9.15683E+02 SHOULD BE  7.61329E+02
```

37. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 6.90000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 8.11805E+02 SHOULD BE 6.74961E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  6.90000E+05. STRENGTH FUNCTION IS  1.20000E-04
                         DENSITY  8.11805E+02 SHOULD BE  6.74961E+02
```

38. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 7.90000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 7.20311E+02 SHOULD BE 5.98890E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  7.90000E+05. STRENGTH FUNCTION IS  1.20000E-04
                         DENSITY  7.20311E+02 SHOULD BE  5.98890E+02
```

39. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 8.90000E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 6.39652E+02 SHOULD BE 5.31827E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  8.90000E+05. STRENGTH FUNCTION IS  1.20000E-04
                         DENSITY  6.39652E+02 SHOULD BE  5.31827E+02
```

40. Level density in URR not in agreement with PSYCHE's expectations
FILE 2 / SECTION 151 / ENERGY = 9.18750E+05. STRENGTH FUNCTION IS 1.20000E-04 / DENSITY 6.18273E+02 SHOULD BE 5.14052E+02 (0): URR dens. (a)

```
FILE  2
   SECTION 151
            ENERGY =  9.18750E+05. STRENGTH FUNCTION IS  1.20000E-04
                         DENSITY  6.18273E+02 SHOULD BE  5.14052E+02
```

41. Non-threshold reaction with Q value differing from PSYCHE's expectations
FILE 3 / SECTION 102 / THE CALCULATED Q 6.13261E+06 DISSAGREES WITH THE GIVEN Q 6.46300E+06 (0): Iffy Q

```
FILE  3
   SECTION 102
            THE CALCULATED Q  6.13261E+06 DISSAGREES WITH THE GIVEN Q  6.46300E+06
```

- `recent` Warnings:

1. Competative widths aren't all zero like they're supposed to be
   0: LRX=0

```
 Calculate Cross Sections from Resonance Parameters (RECENT 2015-1)
 ============================================================================
 Retrieval Criteria-----------        MAT
 File 2 Mimimum Cross Section- 1.0000E-10 (Standard Option)
 Reactions with No Background-     Output (Resonance Contribution)
... [404 more lines]
```

- `fudge-4.0` Warnings:

  1. Missing a channel with a particular angular momenta combination
     resonances / resolved / MultiLevel_BreitWigner (Error # 0): missingResonanceChannel

```
WARNING: Missing a channel with angular momenta combination L = 0, J = 1.5 and S = 1.5 for "capture"
WARNING: Missing a channel with angular momenta combination L = 1, J = 0.5 and S = 1.5 for "capture"
WARNING: Missing a channel with angular momenta combination L = 1, J = 1.5 and S = 1.5 for "capture"
WARNING: Missing a channel with angular momenta combination L = 1, J = 2.5 and S = 1.5 for "capture"
```

  2. Potential scattering hasn't converted, you need more L's!
     resonances / resolved (Error # 1): potentialScatteringNotConverged

```
WARNING: Potential scattering hasn't converged by L=1 at E=89400.0 eV, xs[1]/xs[0]=0.272346887894% > 0.1%
```

  3. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
     Section 0 (total): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

  4. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
     Section 1 (n + Zr94): / Form 'eval': / Component 1 (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

  5. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
     Section 2 ((z,n)): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

  6. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
     Section 3 (n[multiplicity:'2'] + Zr93 + gamma): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

  7. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
     Section 4 (Zr95 + gamma): / Form 'eval': / Component 1 (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

- `fudge-4.0` Errors:

1. Level energy in gamma data doesn't match level energy in cross section data
   Reading ENDF file: ../n-040_Zr_094.endf (Error # 0): Level mismatch (d)

   ```
   WARNING: MT811 MF12 level energy 2064660. eV differs from MF3 value 2064660.1 eV. Setting to MF3 value.
   ```

2. Level energy in gamma data doesn't match level energy in cross section data
   Reading ENDF file: ../n-040_Zr_094.endf (Error # 1): Level mismatch (d)

   ```
   WARNING: MT812 MF12 level energy 2077500. eV differs from MF3 value 2077500.1 eV. Setting to MF3 value.
   ```

3. Calculated and tabulated Q values disagree.
   reaction label 14: n[multiplicity:'2'] + Zr93 + gamma (Error # 0): Q mismatch

   ```
   WARNING: Calculated and tabulated Q-values disagree: -8235089.51991272 eV vs -8.22e6 eV!
   ```

4. Calculated and tabulated Q values disagree.
   reaction label 15: n[multiplicity:'3'] + Zr92 + gamma (Error # 0): Q mismatch

   ```
   WARNING: Calculated and tabulated Q-values disagree: -14969564.88439941 eV vs -1.4953e7 eV!
   ```

5. Calculated and tabulated Q values disagree.
   reaction label 16: n + H1 + Y93 + gamma (Error # 0): Q mismatch

   ```
   WARNING: Calculated and tabulated Q-values disagree: -10346172.29821777 eV vs -8.107e6 eV!
   ```

6. Calculated and tabulated Q values disagree.
   reaction label 17: n + H2 + Y92 + gamma (Error # 0): Q mismatch

   ```
   WARNING: Calculated and tabulated Q-values disagree: -15607130.04164124 eV vs -9.33e6 eV!
   ```

7. Calculated and tabulated Q values disagree.
   reaction label 18: H1 + Y94 (Error # 0): Q mismatch

   ```
   WARNING: Calculated and tabulated Q-values disagree: -4149516.446121216 eV vs -4.134e6 eV!
   ```

8. Calculated and tabulated Q values disagree.
   reaction label 19: H1 + Y94_e1 (Error # 0): Q mismatch

   ```
   WARNING: Calculated and tabulated Q-values disagree: -4589516.446121216 eV vs -4.574e6 eV!
   ```

9. Calculated and tabulated Q values disagree.
   reaction label 20: H1 + Y94_e2 (Error # 0): Q mismatch

   ```
   WARNING: Calculated and tabulated Q-values disagree: -4771216.446121216 eV vs -4.7557e6 eV!
   ```

10. Calculated and tabulated Q values disagree.
    reaction label 21: H1 + Y94_e3 (Error # 0): Q mismatch

    ```
    WARNING: Calculated and tabulated Q-values disagree: -4873316.446121216 eV vs -4.8578e6 eV!
    ```

11. Calculated and tabulated Q values disagree.
    reaction label 22: H1 + Y94_e4 (Error # 0): Q mismatch

    ```
    WARNING: Calculated and tabulated Q-values disagree: -5056426.446121216 eV vs -5040910. eV!
    ```

12. Calculated and tabulated Q values disagree.
reaction label 23: H1 + Y94_e5 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -5319516.446121216 eV vs -5.304e6 eV!
```

13. Calculated and tabulated Q values disagree.
reaction label 24: H1 + Y94_e6 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -5539516.446121216 eV vs -5.524e6 eV!
```

14. Calculated and tabulated Q values disagree.
reaction label 25: H1 + Y94_e7 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -5577226.446121216 eV vs -5561710. eV!
```

15. Calculated and tabulated Q values disagree.
reaction label 26: H1 + Y94_e8 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -5586526.446121216 eV vs -5571010. eV!
```

16. Calculated and tabulated Q values disagree.
reaction label 27: H1 + Y94_e9 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -5679516.446121216 eV vs -5.664e6 eV!
```

17. Calculated and tabulated Q values disagree.
reaction label 28: H1 + (Y94_c ->Y94 + gamma) (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -5679516.446121216 eV vs -5.664e6 eV!
```

18. Energy range of data set does not match cross section range
reaction label 40: He4 + Sr91_e11 / Product: He4 / Distribution: / angularTwoBody - XYs2d: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (46150.6 -> 20000000.0) vs (46150.54 -> 20000000.0)
```

19. Calculated and tabulated Q values disagree.
reaction label 70: Zr95 + gamma (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 6448272.35395813 eV vs 6.463e6 eV!
```

20. Calculated and tabulated Q values disagree.
reaction label 71: n + He4 + Sr90 + gamma (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -3762886.827636719 eV vs -3.749e6 eV!
```

21. Calculated and tabulated Q values disagree.
reaction label 72: n[multiplicity:'2'] + He4 + Sr89 + gamma (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -11566667.05738831 eV vs -1.1555e7 eV!
```

22. Calculated and tabulated Q values disagree.
reaction label 74: H2 + (Y93_s ->Y93 + gamma) (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -8125979.295532227 eV vs -8.107e6 eV!
```

23. Calculated and tabulated Q values disagree.
reaction label 75: H3 + (Y92_s -> Y92 + gamma) (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -9349624.276824951 eV vs -9.33e6 eV!
```

- `njoy2012` Warnings:

1. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (0): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt 16 does not give recoil za= 40093
                          one-particle recoil approx. used.
```

2. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (1): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt 17 does not give recoil za= 40092
                          one-particle recoil approx. used.
```

3. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (2): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt 22 does not give recoil za= 38090
                          one-particle recoil approx. used.
```

4. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (3): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt 24 does not give recoil za= 38089
                          one-particle recoil approx. used.
```

5. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (4): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt 28 does not give recoil za= 39093
                          one-particle recoil approx. used.
```

6. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (5): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt 32 does not give recoil za= 39092
                          one-particle recoil approx. used.
```

7. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (6): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt 91 does not give recoil za= 40094
                          one-particle recoil approx. used.
```

8. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (7): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt102 does not give recoil za= 40095
                          photon momentum recoil used.
```

9. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (8): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt104 does not give recoil za= 39093
                          one-particle recoil approx. used.
```

10. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (9): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt105 does not give recoil za= 39092
                          one-particle recoil approx. used.
```

11. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (10): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt112 does not give recoil za= 37090
                          one-particle recoil approx. used.
```

12. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (11): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt649 does not give recoil za= 39094
                          one-particle recoil approx. used.
```

13. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (12): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt849 does not give recoil za= 38091
                          one-particle recoil approx. used.
```

- `xsectplotter` Errors:

1. Level energy in gamma data doesn't match level energy in cross section data
(Error # 2): Level mismatch (d)

```
WARNING: MT811 MF12 level energy 2064660. eV differs from MF3 value 2064660.1 eV. Setting to MF3 value.
```

2. Level energy in gamma data doesn't match level energy in cross section data
(Error # 3): Level mismatch (d)

```
WARNING: MT812 MF12 level energy 2077500. eV differs from MF3 value 2077500.1 eV. Setting to MF3 value.
```